Claims 1 and 2, 5 and 9 to 13 were rejected under 35 USC 102(e) as allegedly being completely anticipated by Kobsa USPN 6,163,010. Kobsa's invention is used for laser cutting thin sheets of stainless steel (see Examples 1 and 2 at Col. 8). Kobsa teaches that cutting "creates a pool of molten material" (see Col. 2, lines 1 to 12). Kobsa teaches that his "laser beam is focused to a plane between the upper and the lower surface of the object, which either melts or vaporizes the material" that "is expelled by the laser beam from the object or a pressurized fluid flowing coaxially with the laser beam."

The applicants do not expel any molten metal and do not focus their laser beam into the object so as to melt and/or vaporize the sheet being cut. Accordingly, applicants respectfully traverse the alleged teaching of the reject claims on Kobsa.

The preamble of amended Claim 1 calls for marking visible surface deformation on the surface of a multi-layered workpiece. The Kobsa reference is not capable of marking a surface of a multi-layered workpiece and only teaches cutting thin sheets!

Applicants and Kobsa both employ laser generators, attenuators, expanders and collimators, however, the collimated spot of applicants' system is used for marking. Kobsa's beam melts, cuts and removes metal above and below his beam focus point.

Claim 1 calls for a "collimated conditioned marking beam." Kobsa does not teach a marking beam and focuses his collimated beam into a workpiece.

Claim 1 calls for a "beam steerer for directing and focusing said marking beam onto a surface of said multi-

layered workpiece," etc. Kobsa has no teaching which responds to any part of element (e) of Claim 1.

Claim 1 calls for a material handler. Kobsa has an X-Y table, not a material handler.

In summary, Kobsa clearly does not teach four of the elements and the mode of operation set forth in Claim 1 and is not capable of marking any layer, let alone a carbon layer, without removing metal from the workpiece! Claims 2 to 13 are dependent from allowable Claim 1 and provide distinctions not found in Kobsa or the cited secondary references.

Claims 3, 4 and 6 to 8 were rejected under 35 USC 103 on the principal reference Kobsa in view of Johnson et al. '654 or Stovell et al. '939 or Maruyama '651. All of the secondary references cut or remove material. Johnson et al. trims thin film resistors. Stovall et al. engraves (i.e. cuts) engraving cylinders. Maruyama's apparatus machines workpieces with a cutting beam. Each of the secondary references employ a complex series of elements to create a focused beam and/or a polarized light beam. None of the secondary references teach or suggest that they may be combined with Kobsa. Therefore, the rejection based on combined references is a hindsight rejection in which parts and elements of the references are selected using applicants' claims as a guide or list. When parts of these references are inserted into Kobsa, the references become inoperable. Clearly the rejection is improper and must be withdrawn.

Applicants will submit new formal drawings when the claim or claims are allowed.

Claims 46 to 51 are added to more clearly distinguish over the cited references.

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Amended Claims 1 to 13 and new claims 46 to 51 are now in this application in allowable form which distinguishes over the cited art. Reconsideration and allowance of these claims is requested.

A petition for an extension of time is attached.

Respectfully submitted,

John B. Sowell - Attorney
Registration No. 19,151

Enclosure (1)

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on 18 OCT 2001
(Date of Deposit)

JOHN B. SOWELL — ATTORNEY
(Name of Applicant, Assignee, or Registered Representative)

Signature

18 OCT 2001
Date of Signature

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ATTACHED PAGES 1 to 4

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

1 (Amended). A laser apparatus for marking visible surface deformations on the surface of a multi-layered workpiece including an upper carbon layer, at least one intermediate metallic layer, and a lower metallic substrate, comprising:

(a) a laser generator for generating an unconditioned output laser beam;

(b) a beam conditioner responsive to said output laser beam including (i) a beam expander operative to generate an expanded laser beam and (ii) a beam collimator for collimating said beam;

(c) a variable beam attenuator responsive to said expanded collimated beam and operative to generate a collimated conditioned marking beam;

[workpiece such as a]

[creating]

[and operative to generate a conditioned laser beam; said beam conditioner]

[responsive to said output laser beam and]

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(d) a beam sampler in the path of said conditioned marking beam;

(e) a beam steerer in the path of said marking beam for directing and focusing said marking beam onto a surface of [a] said multi-layered workpiece and for melting one of said at least one intermediate metallic layers and creating visible markings in said upper carbon layer without removing carbon or metal; and

[[d]] (f) a materials handler for positioning [said] workpieces in the path of said marking beam.

2 (Amended). A laser apparatus as recited in Claim 1 wherein said variable beam attenuator includes a first optical plate responsive to said expanded laser beam and operative to generate [a] said conditioned laser beam; and a beam splitter responsive to said conditioned laser beam and operative to split said conditioned laser beam into a plurality of beams including said marking beams.

5 (Amended). A laser apparatus as recited in Claim 1 wherein said beam sampler further [comprising] comprises a beam [sampler and a] detector, said beam sampler being positioned in the path of said marking beam and capable of passing a sample of said marking beam to said detector, said beam detector being capable of receiving said sample and generating a signal responsive to the fluence of said marking beam.

6 (Amended). A laser apparatus as recited in Claim 1 wherein said variable beam attenuator includes a beam splitter, and wherein said apparatus further comprises an optical isolator for optically isolating the laser generator from any reflection of said marking beam to said laser generator, said optical isolator including a second optical plate positioned in the path of said marking beam,

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whereby the polarization plane of any reflection of the marking beam is rotated such that the reflection exits the beam splitter in a direction away from said laser beam generator.

[second optical plate is a quarter-wave plate]

[6] 7 (Amended). A laser apparatus as recited in Claim 1 wherein said beam steerer comprises a galvanometer for directing said marking beam.

11 (Amended). A laser apparatus as recited in [selected] Claim 1 wherein said marking beam is scanned across a portion of the surface of said workpiece to form surface deformations therein in a predetermined pattern.

46. A laser apparatus for writing visible surface deformations on a top surface of a multi-layered workpiece having a top layer and a plurality of intermediate metallic layers and a supporting substrate layer, comprising:

(a) one of said plurality of intermediate metallic layers having a lower melting temperature than the layer above it comprising a sublayer to be melted;

(b) a laser generator for generating a laser beam;

(c) a laser beam expander, and

(d) a laser beam colliminator for generating a collimated marking beam;

(e) an optical attenuator for controlling the energy level of said collimated marking beam;

(f) a beam sampler for diverting a sample of said collimated marking beam;

(g) a beam steerer coupled to receive said collimated marking beam and for writing and directing a marking beam onto said multi-layered workpiece for melting said sublayer to be melted and said sublayer creates visible

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ripples in the top layer of said multi-layered workpiece upon solidifying.

47. A laser apparatus as set forth in Claim 46 wherein said multi-layered workpiece comprises a magnetic disk comprising a carbon top layer, a magnetic layer and intermediate metallic sublayer comprising nickel having a lower melting temperature than said top layer and said magnetic layer, and

visible ripples formed in said top layer by melting said sublayer.

48. A laser apparatus as set forth in Claim 46 which further includes control means coupled to said beam steerer and said beam sampler for controlling the intensity of said marking beam.

49. A laser apparatus as set forth in Claim 48 wherein said control means is coupled to said laser beam expander for controlling the size of the collimated marking beam.

50. A laser apparatus as set forth in Claim 46 wherein said upper layer comprises a lubricating layer on top of a carbon protective layer, and said marking beam evaporates said lubricating layer without contaminating said top layer.

51. A laser apparatus as set forth in Claim 50 wherein visible ripples appear in said carbon layer without removing any carbon.